AMENDMENTS

CLAIMS:

1. (Original) An apparatus for regulating a flow rate of product dropped from a conveyor, said apparatus comprising:

a gate for controlling a size of an opening in said conveyor wherein said gate may be partially opened to allow some product to drop through said opening while other product passes along a side of said opening for deposit in a subsequent gate on said conveyor;

a control system for regulating said size of said opening in said conveyor wherein said control system regulates said size of said opening based on a demand for said product to be dropped from said conveyor.

2. (Original) The apparatus of claim 1 wherein said gate comprises a plurality of fingers and said control system actuates said plurality of fingers independently to control said size of said opening.

3. (Original) The apparatus of claim 2 wherein said control system comprises a plurality of pneumatic actuators each of which is connected to a corresponding one of said plurality of fingers.

4. (Original) The apparatus of claim 2 wherein a longitudinal axis of said plurality of fingers is aligned with a longitudinal axis of said conveyor.

5. (Currently Amended) The apparatus of claim 4 wherein responsive to a demand for said product, ~~an outside~~ first finger of said plurality of fingers is first opened to allow said product to drop from said conveyor, and wherein responsive to a demand for more product after said ~~outside~~ first finger has been open for a predetermined time, ~~an adjacent~~ second finger of said plurality of fingers is opened to make said size of said opening larger and wherein responsive to a determination that too much product is being dropped from said conveyor, said adjacent finger and said ~~outside~~first finger are closed one at a time in a reverse sequence to make said size of said opening smaller.

6. (Withdrawn) The apparatus of claim 1 wherein said gate comprises two boards movably attached to said conveyor wherein responsive to a force acting in a first direction on said two boards, said two boards move closer together thereby decreasing said size of said opening and wherein responsive to a force acting in a second direction opposite to said first direction, said two boards move apart thereby increasing said size of said opening.

7. (Withdrawn) The apparatus of claim 6 wherein said gate further comprises an actuator attached to said two boards for applying a force to said two boards for opening and closing said gate.

8. (Withdrawn) The apparatus of claim 7 wherein said actuator may position said two boards in any position between a fully open position and a fully closed position.

9. (Original) The apparatus of claim 1 wherein said control system comprises:

a pneumatic controller having an analog input from a level sensor and a pneumatic output such that said controller determines said demand for said product based on said analog input from said level sensor; and

a pneumatic actuator attached to said gate for opening and closing said gate, wherein responsive to a determination by said controller that more product is needed, said controller moves said pneumatic actuator to increase said size of said opening, and responsive to a determination that less product is needed, said controller moves said pneumatic actuator to decrease said size of said opening.

10. (Original) The apparatus of claim 1 wherein said gate increases said size of said opening by increasing a width of said opening wherein a length of said opening measured in a direction of product flow remains constant while said gate is in an open position.

11. (Original) An apparatus for regulating a flow rate of product dropped from a conveyor, said apparatus comprising:

a plurality of sliding members for covering an opening in said conveyor wherein each of said sliding members is interlocked with an adjacent sliding member such that each of said sliding members is movable in a longitudinal direction with respect to said adjacent sliding member and said conveyor and wherein each of said sliding members is fixed in a lateral direction with respect to said adjacent sliding member and said conveyor;

a plurality of mounting strips attached to a bottom of said conveyor for fixing said plurality of sliding members in said lateral direction wherein each of said plurality of mounting strips attaches adjacent to said opening and interlocks with an outside sliding member of said plurality of sliding members to hold said plurality of sliding members in place in said lateral direction while allowing said plurality of sliding member to move freely in said longitudinal direction;

a plurality of actuators for independently actuating each of said plurality of sliding members wherein a first end of each of said plurality of actuators is attached to said conveyor and wherein a second end of each of said plurality of actuators is attached to a respective one of said plurality of sliding members for moving said one of said plurality of sliding members in said longitudinal direction;

a controller for controlling said plurality of actuators wherein said controller determines an amount of product to be dropped from said conveyor and then actuates a corresponding number of said plurality of actuators such that said opening is of a size to allow said amount of product to fall from said conveyor.

12. (Original) The apparatus of claim 11 wherein said controller opens said plurality of sliding members in a predefined sequence and closes said plurality of sliding members in a reverse order of said predefined sequence.

13. (Original) The apparatus of claim 12 wherein said predefined sequence comprises starting by opening an outer sliding member and then opening an adjacent sliding member.

14. (Original) The apparatus of claim 13 wherein a size of said opening made by opening said outer sliding member is set such that a flow rate of product through said opening during a normal mode of operation is equivalent to said amount of product to be dropped.

15. (Withdrawn) An apparatus for regulating a flow rate of product dropped from a conveyor, said apparatus comprising:

a first sliding member for covering a first side of an opening in said conveyor wherein said first sliding member contains a first groove for guiding said first sliding member as it slides at an acute angle to a longitudinal axis of said conveyor;

a second sliding member for covering a second side of said opening in said conveyor wherein said second sliding member contains a second groove for guiding said second sliding member as it slides at said acute angle;

a first guide attached to said conveyor for holding said first sliding member in place;

a second guide attached to said conveyor for holding said second sliding member in place;

an actuator attached on a first end to said first sliding member and said second sliding member and attached on a second end to said conveyor such that responsive to said actuator moving in a first direction said first sliding member and said second sliding member are moved closer together and responsive to said actuator moving in a second direction said first sliding member and said second sliding member are moved apart thereby increasing size of said opening; and

a controller for controlling said actuator wherein said controller determines an amount of product to be dropped from said conveyor and then moves said actuator to a position that will allow said amount of product to fall from said conveyor.

16. (Withdrawn) The apparatus of claim 15 wherein said first sliding member and said second sliding member are of a same rectangular shape wherein in a closed position a long inner edge of said first sliding member and a long inner edge of said second sliding member fit together to cover said opening.

17. (Withdrawn) The apparatus of claim 15 wherein said first sliding member is placed between said first guide and a bottom of said conveyor such that said first guide holds said first sliding member against said bottom of said conveyor and wherein said second sliding member is placed between said second guide and said bottom of said conveyor and wherein an angle between said first guide and said second guide is approximately twice said acute angle.

18. (Withdrawn) The apparatus of claim 15 wherein said actuator is attached to said first sliding member with a first link rotably mounted to said actuator and said first sliding member and wherein said actuator is attached to said second sliding member with a second link rotably mounted to said actuator and said second sliding member.

19. (Withdrawn) An apparatus for distributing product to a plurality of sets of bagmakers comprising:

a distribution conveyor for conveying said product to a plurality of gates located in said distribution conveyor;

a plurality of cross-feeder conveyors for conveying product to said plurality of sets of bagmakers from said distribution conveyor;

a first gate in said distribution conveyor for metering a flow of product to a first cross-feeder conveyor wherein during a normal mode of operation said first gate is partially open such that a portion of said product is dropped through said first gate and a remainder of said product bypasses said gate for deposit in a subsequent gate.

20. (Withdrawn) The apparatus of claim 19 wherein a size of an opening of said first gate is based on a level of product in said first cross-feeder conveyor and wherein said size is adjusted to provide a steady flow of product to said first cross-feeder conveyor.

21. (Withdrawn) The apparatus of claim 20 wherein said first gate is a finger gate.

22. (Withdrawn) The apparatus of claim 20 wherein said first gate is a V-gate.

23. (Withdrawn) The apparatus of claim 20 wherein said first gate is a diverter gate.

24. (Withdrawn) A method of regulating a flow rate of product dropped from a conveyor, said method comprising:

determining a demand for said product;

opening a gate to a position corresponding to said demand for said product wherein in a normal mode of operation some product is dropped through an opening in said conveyor while other product passes along a side of said opening for deposit into a subsequent gate on said conveyor.

25. (Withdrawn) The method of claim 24 further comprising controlling said gate using a computerized control system for opening and closing said gate wherein said control system regulates said size of said opening based on a demand for said product.

26. (Withdrawn) The method of claim 25 wherein said gate is a finger gate.

27. (Withdrawn) The method of claim 26 wherein opening only a first finger of said finger gate produces a steady flow of product through said finger gate during said normal mode of operation.

28. (Withdrawn) The method of claim 25 wherein said gate is a V-gate.

29. (Withdrawn) The method of claim 25 wherein said gate is a diverter gate.

30. (Withdrawn) An apparatus for regulating a flow rate of product dropped from a conveyor, said apparatus comprising:

a diverter placed adjacent to an opening in a bottom of said conveyor for controlling an amount of product allowed to fall through said opening wherein said diverter can be rotably positioned to divert a variable amount of said product to said opening;

a control system for varying a position of said diverter based on a demand for said product.

31. (Withdrawn) The apparatus of claim 30 wherein said diverter is rotably attached to said conveyor such that it rotates responsive to a force applied to a side of said diverter.

32. (Withdrawn) The apparatus of claim 30 wherein said control system comprises:

a programmable logic controller having a level sensor input;

an actuator mechanically attached to said diverter for rotating said diverter across a width of said conveyor wherein said actuator is controlled by said programmable logic controller.

33. (Withdrawn) The apparatus of claim 32 wherein said actuator is a magnetically coupled rodless cylinder.

34. (Withdrawn) The apparatus of claim 30 wherein said variable amount is in a range from none of said product to all of said product being diverted to said opening.